

# GRANT & HACKH'S CHEMICAL DICTIONARY

[American, International, European and British Usage]

*Containing the Words Generally Used in Chemistry,  
and Many of the Terms Used in the Related  
Sciences of Physics, Medicine, Engineering,  
Biology, Pharmacy, Astrophysics,  
Agriculture, Mineralogy, etc.*

*Based on Recent Scientific Literature*

FIFTH EDITION  
*Completely Revised and Edited by*

**ROGER GRANT**

*M.A., D. de l'U., Ph.D., C. Chem., M.R.S.C. Consultant*

**CLAIRE GRANT**

*M.B., B.S., M.R.C.P.E., Medical Practitioner*

**Dr. Hellmuth A. Deckers**  
European Patent Attorney  
Bahnhofstraße 26 A  
D-55218 Ingelheim am Rhein  
Tel. +49 - 6132 - 8996-0  
Fax +49 - 6132 - 8996-20

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carbon atom: primary a.,  $R\cdot CH_2OH$ ; secondary a.,  $R_2CHOH$ ; tertiary a.,  $R_3COH$ ; (2) the number of  $OH$  groups; as,

$R_3COH$	mono-	Prefix	Suffix
$R_2COH$	di-	-hydroxy	ol
$ROH$	tri-	-hydric	diol
$(ROH)_2$	tetra-	-basic	triol
$(ROH)_3$	penta-		tetrol
$(ROH)_4$	poly-		pentol

a. or  
—

See *aromatic alcohols*, *phenols*, and *alcohol acids*. **aldehyde** ~ Compounds containing the  $-CHO$  and  $-OH$  groups.

**aromatic** ~ Cyclic compounds containing the  $-OH$  group in a side chain; cf. *phenols*. **primary** ~ Compounds containing the group  $-CH_2OH$ . **secondary** ~ Compounds containing the  $=CHOH$  group. **tertiary** ~ Compounds containing the  $=COH$  group.

**a.** of crystallization The a. contained in a crystalline salt in a molecule; e.g.,  $KOH \cdot 2C_2H_5O$ .

**alcoholysis** The cleavage of a C-C bond by the addition of an alcohol:  $R\cdot CH_2\cdot R' + R''OH \rightarrow R''OCH_2R + R'H$ . Cf. *hydrolysis*.

**Alcometer** See *breath alcohol*.

**alecopol.** Trade name for a surfactant of the dioctylsulfosuccinate type.

**alcosol.** A sol in alcohol.

**alcumite** A corrosion-resistant alloy: Cu 88-90, Al 7.5, Fe 28-35, Ni 1%.

**aletyl.** Alicyclic. An aliphatic-cyclic radical; a saturated aromatic radical.

**Aldactone** Trademark for spironolactone.

**aldalocetone** A carbohydrate containing the aldehyde ( $-CHO$ ), alcohol ( $-OH$ ), and carbonyl ( $=CO$ ) radicals.

**aldebaranium** Thulium\*.

**aldehydase** Aldehyde oxidase\*, which forms acids from aldehydes.

**aldehyde** (1) Acetaldehyde\*. (2) See *aldehydes*. **acetic** ~ Acetaldehyde\*. **anisic** ~ Anisaldehyde\*. **cinnamic** ~ Cinnamaldehyde\*. **cuminic** ~ Cumic a. **heptylic** ~ Heptanal\*. **met-** See *metaldehyde*. **nonanthic** ~ Heptanal\*. **par-** See *paraldehyde*. **propionic** ~ Propionaldehyde\*. **pyromuonic** ~ Pyraldehyde\*. **salicylic** ~ Salicylaldehyde.

**a. ammonia** (1) A compound formed by the combination of an a. and ammonia. Crystalline, decomp. on warming with dilute acid; used for the purification of aldehydes. (2)  $MeCH(OH)NH_2 = 61.1$ . Colorless crystals, m.97, soluble in water. a. condensation See *aldol condensation*. a. group The  $-CHO$  radical, in which the H is not replaceable by a positive radical, but can be replaced by negative atoms or groups. Cf. *aldehydes*. a. ketone  $R\cdot CO\cdot R\cdot CHO$ . **Ketoaldehyde**, a. *oxido*\* See *aldehydase*.

**aldehydene** Acetylene\*.

**aldehydes\*** Organic compounds containing the  $-CHO$  radical, oxidized to acids and reduced to alcohols. a. are indicated by the prefix *oxo*\* (for O of CO) or *formyl*\* (for CHO), or by the suffix *-al*\*, *-dial*\*, *-trial*\*, *-(carb)aldehyde*\*, etc. **di-** Compounds containing 2 a. groups. **olefin** ~ Compounds containing a double bond and the a. group. **paraffin** ~ Compounds containing the a. group attached to a saturated aliphatic chain. **thio-** ~ Compounds containing the  $-CHS$  group.

**-aldehydic** Suffix indicating that one COOH group in a dicarboxylic acid, with a trivial name, has been changed into a CHO group; as malonaldehydic acid,  $OHC\cdot CH_2COOH$ . **a.** hydrogen The H atom of the aldehyde group; not readily replaced by metals.

**aldehydine**  $C_2H_3NMeEt = 121.2$ . 2-Ethyl-5-methylpyridine. Colorless liquid, d<sub>25</sub> 0.9918, b.173, insoluble in water.

**aldicarb\*** See *insecticides*, Table 45.

**aldime**  $R\cdot CH(NH)$ . An acid imine.

**aldoionic acids** Oxidized trisaccharides; as, gluco- $\beta$ -glucuronic acid, from the hydrolysis of flaxseed mucilage.

**aldohexose\*** A hexose containing the aldehyde group; e.g., glucose. Cf. *ketohexose*.

**aldoketone** See *ketones*.

**aldol**  $Me\cdot CHOH\cdot CH_2\cdot CHO = 88.1$ . (1)  $\beta$ -Hydroxybutyric aldehyde, 3-hydroxybutanal\*. A condensation product of acetaldehyde. Colorless liquid, d.1.109, soluble in hot water. Its solution leaves a polymer, paraldol, on evaporation. Cf. *paraldehyde*, *metaldehyde*. (2) One of a class of condensation products formed from an aldehyde. a. condensation The polymerization of an aldehyde in presence of dilute acid or alkali, e.g., aldol formation. The aldol polymer is stabler than the meta and para polymers. Three types: (1) true aldol condensation:  $R_2CO + H\cdot CH_2COR \rightarrow R_2C(OH)\cdot CH_2\cdot COR \rightarrow R_2C\cdot CH\cdot COR$ , (2) Cannizzaro reaction:  $2R\cdot CHO \rightarrow R\cdot COOH + R\cdot CH_2OH$ , (3) Claisen condensation:  $2R\cdot COOR' \rightarrow RC(OH)COR' + R'OH$ .

**aldolase\*** See *enzymes*, Table 30.

**aldonic acids** Acids produced by gentle oxidation of the corresponding aldoses; as, gluconic acid from glucose.

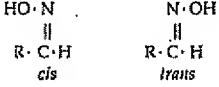
**aldopentose\*** A pentose containing the aldehyde group; as, arabinose.

**aldoose\*** A carbohydrate containing the aldehyde group. Cf. *ketose*, *sugar*.

**aldoxime**  $C_2H_5ON = 59.1$ . Acetaldoxime. Colorless liquid, b.115, soluble in water; used in organic synthesis. Isomeric forms:



**aldoximes\*** Organic compounds containing the  $-C(H):NOH$  group. Stereoisomers:



Form C-, N- and O-substituted compounds.

**aldrey** A noncorroding aluminum alloy, used for transmission lines: Mg 0.4, Si 0.6, Fe 0.3%.

**aldrin\*** See *insecticide*, Table 45 on p. 305.

**alembic** (1) Ancient name for a retort. (2) Figuratively, anything that purifies.

**aletris** False unicorn, starwort, blazing star, colic root, star grass, bitter grass, devil's bit. The dried rhizomes of *Aletris farinosa* (Haemodoraceae) of the United States.

**Aleurites** (1) The Chinese wood or tung oil plant. (2) A genus of trees (Euphorbiaceae) of the warmer zones of Asia which yield oil; as, *A. cordata*, tung oil.

**aleuritic acid**  $C_{16}H_{32}O_5 = 304.4$ . 9,10,16-Trihydroxypalmitic acid, m. 102, from the shellac of *Aleurites montana*.

**aleurometer** A cylinder for testing the baking capacity of flour from the expansion of its gluten.

**aleuronate** A vegetable protein food. A tasteless, yellow powder. a. powder Baked flour mixed with cooked starch for injection into the pleural cavity of animals (rabbits) to stimulate the production of leukocytes. Cf. *leucocyte*.

**aleurone** Protein grains in the endosperm of ripe seeds.

and amino group, formed by the action of ammonia on ketones. Cf. *polypeptide*.

**ketocoumaran** *Oxodihydrobenzofuran*\*

**ketodestrin** Estrone.

**ketohexose**\* A monosaccharide of 6 C atoms, with a ketone group rather than an aldehyde group; e.g., fructose. Cf. *aldohexose*.

**ketohydroxyestrin**  $C_{18}H_{22}O_2 = 270.4$ . A hormone from the urine of pregnant women and mares; an anhydride of estriol. Cf. *sterols*.

**ketolimine** A compound containing an imino and carbonyl group.

**ketolinole** Oxindole.

**ketoketenes** See *ketenes*.

**ketol** Ketone alcohols. A compound containing a carbonyl and hydroxy group. *alpha*-~ A compound containing the  $R-CO-CH_2OH$  group. *beta*-~ A compound containing the  $R-CO-CH_2-CH_2OH$  group. *saturated* ~ An  $\alpha$ - or  $\beta$ -ketone alcohol. *unsaturated* ~ Acetylvinyl alcohols; A compound containing the unsaturated  $R-CO-CH:CHOH$  group.

**ketole** Indole\*.

**ketone**\*  $R-CO-R$ . An organic compound containing the carbonyl group,  $=CO$ , joined to 2 C atoms. Nomenclature: naming the 2 radicals before the term *ketone* or attaching the suffix *-one* to the hydrocarbon;  $CH_3-CO-CH_3$  is dimethyl ketone or propanone (acetone); or attaching the prefix *exo*-, or the suffix *-quinone*. Classification: (1) Aliphatic, saturated: acetone\*, propanone\*,  $Me-CO-Me$ . (2) Aliphatic, unsaturated: 3-buten-2-one\*,  $MeCOCH:CH_2$ . (3) Aliphatic, diketones\*: biacetyl\*, 2,3-butanedione\*,  $MeCOCOMe$ . (4) Cyclic: cyclobutanone\*,  $CO-CH_2-CH_2-CH_2$ . (5) Quinones:

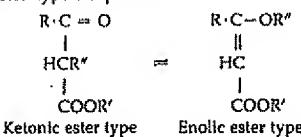
benzoquinone,  $CO-CH:CH\cdot CO-CH:CH$ . (6) Aromatic:

**acetophenone**,  $Ph-COMe$ . *acid* ~ Ketone acid\*. *aldehyde* ~ A compound containing the  $=CO$  and  $-CHO$  groups. *amino* ~ Ketoamine. *benzyl phenethyl* ~  $PhCH_2-CH_2-CO-$   $CH_2-Ph = 224.3$  Colorless liquid, m. 324, soluble in alcohol. *butyl methyl* ~ 2-*Hexanone*\*. *di* ~ See *diketone*.  *dibutyl* ~ 5-*Nonanone*\*. *diethyl* ~ 3-*Pantanone*\*. *dimeethyl* ~ 8-*Pentadecanone*\*. *dimethyl* ~ \* *Acetone*\*. *dipropyl* ~ 4-*Heptanone*\*. *ethyl methyl* ~ 2-*Butanone*\*. *ethyl pentyl* ~ 3-*Octanone*\*. *ethyl propyl* ~ 3-*Hexanone*\*. *heptyl methyl* ~ 2-*Nonanone*\*. *methyl naphthyl* ~  $C_{10}H_7-CO-Me = 170.2$ , 1-~ *Acetonaphthone*. Colorless crystals, m. 34, soluble in alcohol. *methyl pentyl* ~ 2-*Heptanone*\*. *methyl propyl* ~ 2-*Pantanone*\*. *methyl phenyl* ~  $(C_6H_5)COMe = 126.2$ , Colorless liquid, b. 213. *mixed* ~ A k. with 2 different radicals attached to the carbonyl group; as,  $Me-CO-Et$ , *ethyl methyl* k. *nitroso* ~ A compound containing the  $=CO$  and nitroso groups. *olefin* ~ A k. of the alkene series. *paraffin* ~ A k. of the alkane series. *phenyl thienyl* ~  $(C_6H_5)SCOPh = 188.2$ , Colorless crystals, m. 55, soluble in alcohol. *simply* ~ A k. with the same 2 radicals attached to the carbonyl group. *tri* ~ A compound containing 3 carbonyl groups.

**k. acid**\* Oxo acid. A compound containing the radicals  $=CO$  and  $-COOH$ . *alpha*-~ A compound containing the radical  $-CO-COOH$ , e.g., pyruvic acid or 2-oxopropionic acid. *beta*-~ A compound containing the radical  $-COCH_2-COOH$ , e.g., acetoacetic acid. *gamma*-~ A compound containing the radical  $-CO-CH_2-CH_2-COOH$ , e.g., levulinic acid. *delta*-~ A compound containing the radical  $-CO-CH_2-CH_2-CH_2-COOH$ , e.g., acetylbutanoic

acid. *k. alcohol* See *ketol*. *k. base* Michler's k. *k. bodies* Acetone bodies. Collective term for acetone, acetoacetic acid, and 3-hydroxybutanoic acid, which accumulate in the blood in diabetes, starvation, and vomiting. See *ketosis*. *k. color* An artificial color containing the carbonyl group, e.g., alizarin, k. form See *ketonic ester type*. *k. group* The carbonyl,  $=CO$ , group attached to 2 C atoms; it usually confers reducing powers.

**ketonic** Pertaining to a ketone. *k. ester type* An isomer of an enolic ester-type compound:



*Cf. desmotropism*.

**ketonuria** Acetonuria. The excretion of acetone in urine, as occurs in ketosis.

**ketose**\* A sugar containing a ketone group. Cf. *aldose*.

**ketoside** A glucoside which yields a ketose on hydrolysis.

**ketosis** The presence of ketone bodies in the blood.

**ketotriazole** Triazolone.

**ketoxime** (1)\* Acetoxime. A compound containing the  $=C:NO$  group, e.g.,  $Me_2CN\cdot OH$ , acetoxime. (2) A compound containing the  $-HC\cdot NO-$  group. Cf. *Beckmann rearrangement*. *tetra*-~ See *diphenyltetraketoxime*.

**Kevadon** Trademark for thalidomide.

**Kevlar** Trademark for a high-strength aramid.

**key atom** (1) An atom in a chain whose change in electronic structure induces corresponding changes in the other atoms of the chain. (2) An atom in a ring whose oscillations cause a shift of bonds. Cf. *porphyrin ring*.

**kg** Abbreviation for kilogram.

**kgf** Abbreviation for kilogram force.

**khat** Caffe, Arabian tea. The dried leaves of *Catha edulis*; a tea.

**khelin** Khellin. A synthetic dimethoxymethylfurano-chromone derivative, used for its specific coronary vasodilatory activity. Also obtained from the seeds of the wild Mediterranean plant *Ammi visnaga*, Lam.

**Khotinsky, Achilles de** (1850-1933) Russian-born American instrument designer. *de K. cement* A cement for glass and porcelain; insulating, covering, and connecting electric wires, glass, rubber, wood, etc.; resistant to ordinary solvents.

**kibbled** Broken up into small lumps of about 1 cm diameter.

**kidney** A paired mammalian organ that eliminates nitrogenous waste from the bloodstream; also controls the water concentration and electrolyte content, and, in part, the acid-base equilibrium. Much of the filtrate is reabsorbed, together with useful substances, as, amino acids, glucose, salt, proteins. See *glomeruli*.

**kidney ore** Red hematite.

**kies** General term for sulfide ores.

**kieselguhr** Diatomite. Tripoli powder. Guhr. A diatomaceous or infusorial earth. Used as an absorbent for nitroglycerin (dynamite), in chromatography, for filtration and insulation, and as an abrasive in soaps.

**kieserite**  $MgSO_4 \cdot H_2O$ . A native magnesium sulfate. White, compact masses in the Stassfurt salt beds.

**Kikuchi lines** The black and white lines which appear when a stream of electrons is scattered by a crystal surface. Cf. *electron microscope*.

**killeen** Irish moss.